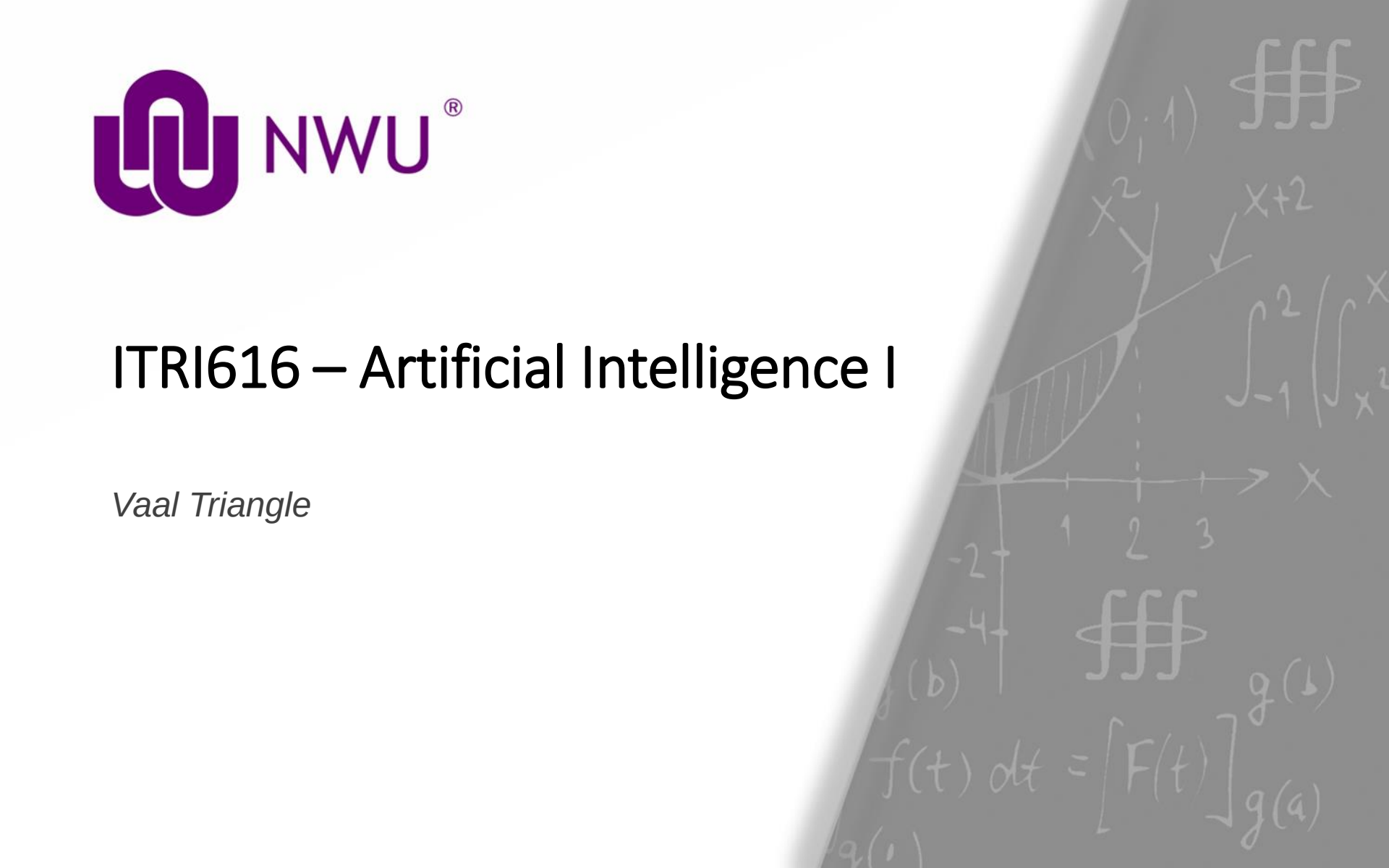


ITRI616 – Artificial Intelligence I

Vaal Triangle

Introduction

- Welcome to ITRI616 2021!
- In this module we will continue your education in AI focusing now search, neural networks and deep learning frameworks

Lecturer

Japie Greeff

Contact number: 016 910 3286
Office: 8-G39/G41
Email: japie.greeff@nwu.ac.za

Consultation Hours:

Tuesdays 09:00 – 16:00 by appointment
Thursdays 09:00 – 16:00 by appointment
Email me though if you have other needs

Administration

Contact Sessions:

Thursdays: 18:00 – 19:00 (online or in 9A-102)

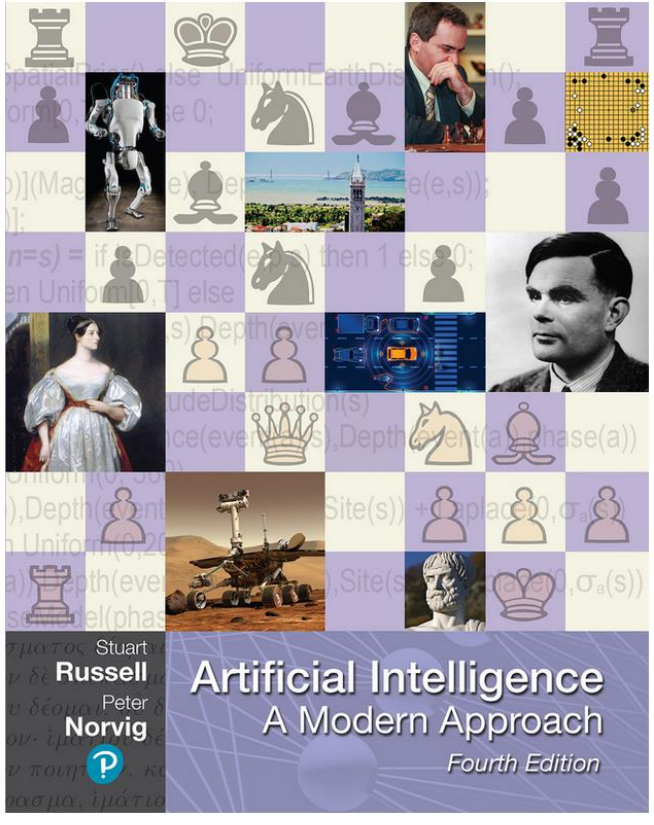
Textbooks:

Russel, S. and Norvig, P. 2021, Artificial Intelligence A Modern Approach. Prentice Hall. Fourth Edition. ISBN: 9780134671932

Trask, A. 2019, Grokking Deep Learning, Manning, First Edition, 2019. ISBN: 9781617293702

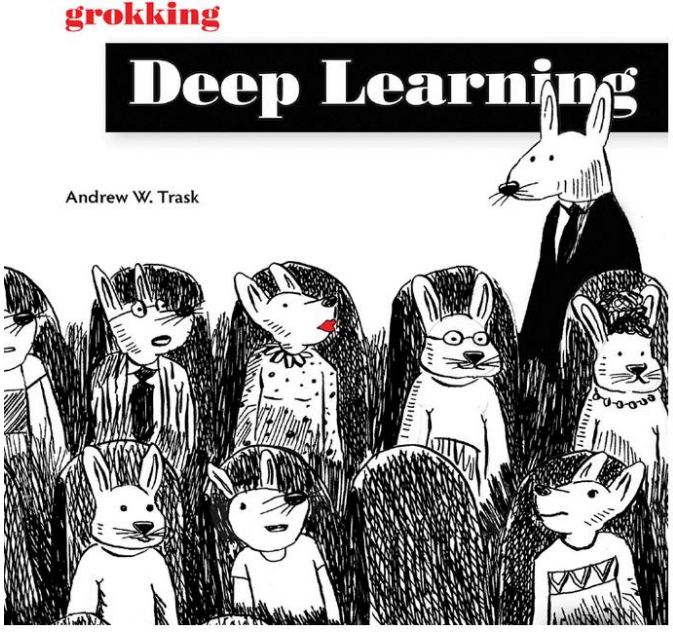
Links to buy the ebooks are on the eFundi site home page

Why these textbooks?



- The standard work: Used by 1400 universities in 128 countries.
- Stuart Russel: Prof at University of California in Computer Science and Neurological Surgery. Founder and leader of Center for Human Compatible AI. Vice Chair for the WEF council on AI and Robotics.
- Peter Norvig: Director of research at Google.

Why these textbooks?



- No mathematics beyond simple calculus required.
- Step by step practical examples.
- Endorsed by leading AI researchers like Lex Fridman of MIT.

Evaluations

No evaluations for the first two weeks after which I will put forward the finalised evaluation plan. There will be in total 15 assessments for the semester. There will be:

7 small practical assignments (approx 5% each – best 6 count)

5 small online tests (approx 5% each – best 4 count)

2 large sit down tests (10% each)

1 final sit down examination (30%)

Evaluations

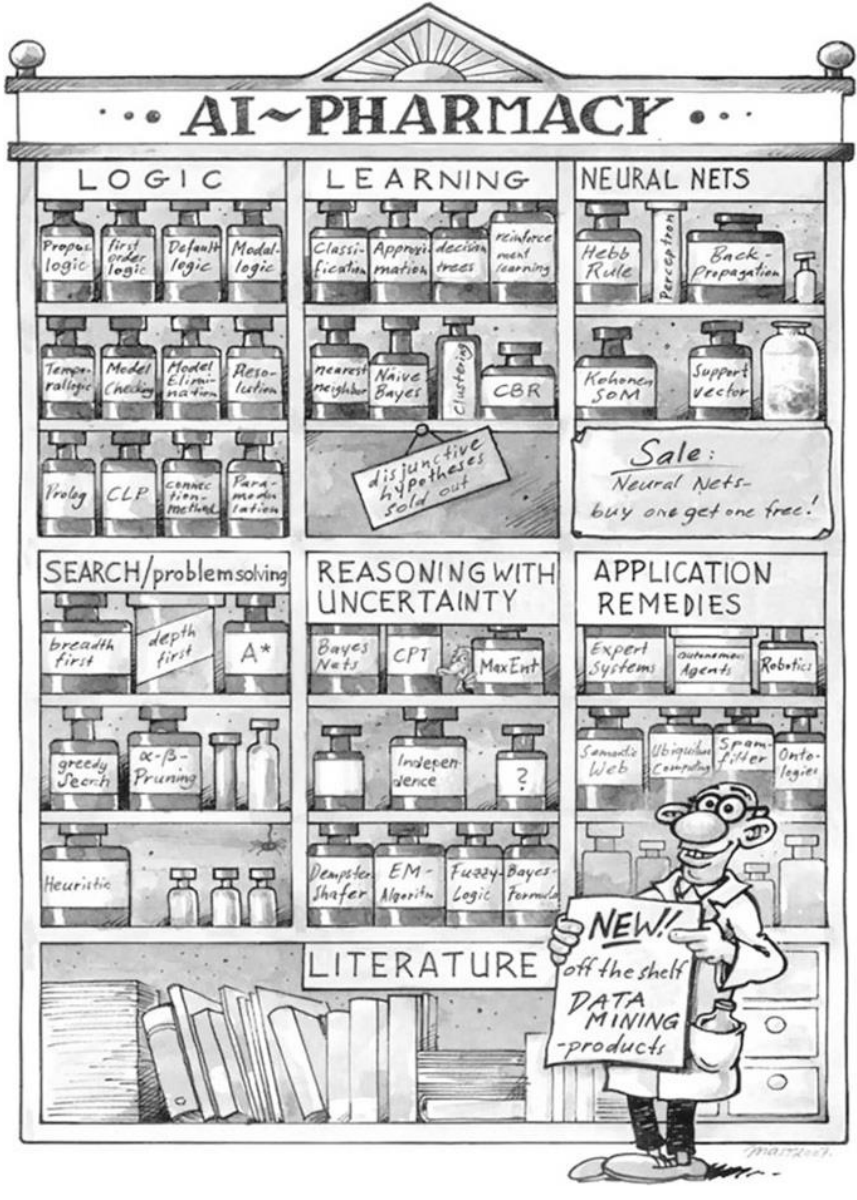
I will listen to valid excuses, but please do try and keep up and submit all of the assessments.

Communication

Whatsapp will again be used this semester – if you are not on the group or struggling to get messages for whatever reason please contact me urgently so we can work out a plan!

Attendance is important, but for online lessons the recordings will be made available in case you miss a class.

Focus


AI~PHARMACY
LOGIC
Propos. logic
first order logic
Default logic
Modal-logic
Tempo-rallogic
Model Checking
Model Elimin-ation
Reso-lution
Prolog
CLP
connec-tion-method
Para-modu-lation
LEARNING
Classi-fication
Approxi-mation
decision trees
reinforce-ment learning
nearest neighbor
Naive Bayes
Clustering
CBR
disjunctive hypotheses sold out
NEURAL NETS
Hebb Rule
Perceptron
Back-Propagation
Kohonen SOM
Support Vector
Sale: Neural Nets- buy one get one free!
SEARCH/problemsolving
breadth first
depth first
A*
greedy Search
α-β-Pruning
Heuristic
REASONING WITH UNCERTAINTY
Bayes Nets
CPT
MaxEnt
Indepen-dence
?
Dempster Shafer
EM-Algorithm
Fuzzy-Logic
Bayes-Formula
APPLICATION REMEDIES
Expert Systems
Autonomous Agents
Robotics
Semantic Web
Ubiquitous computing
Spam-filter
Onto-logies
LITERATURE
NEW!! off the shelf DATA MINING -products

Focus

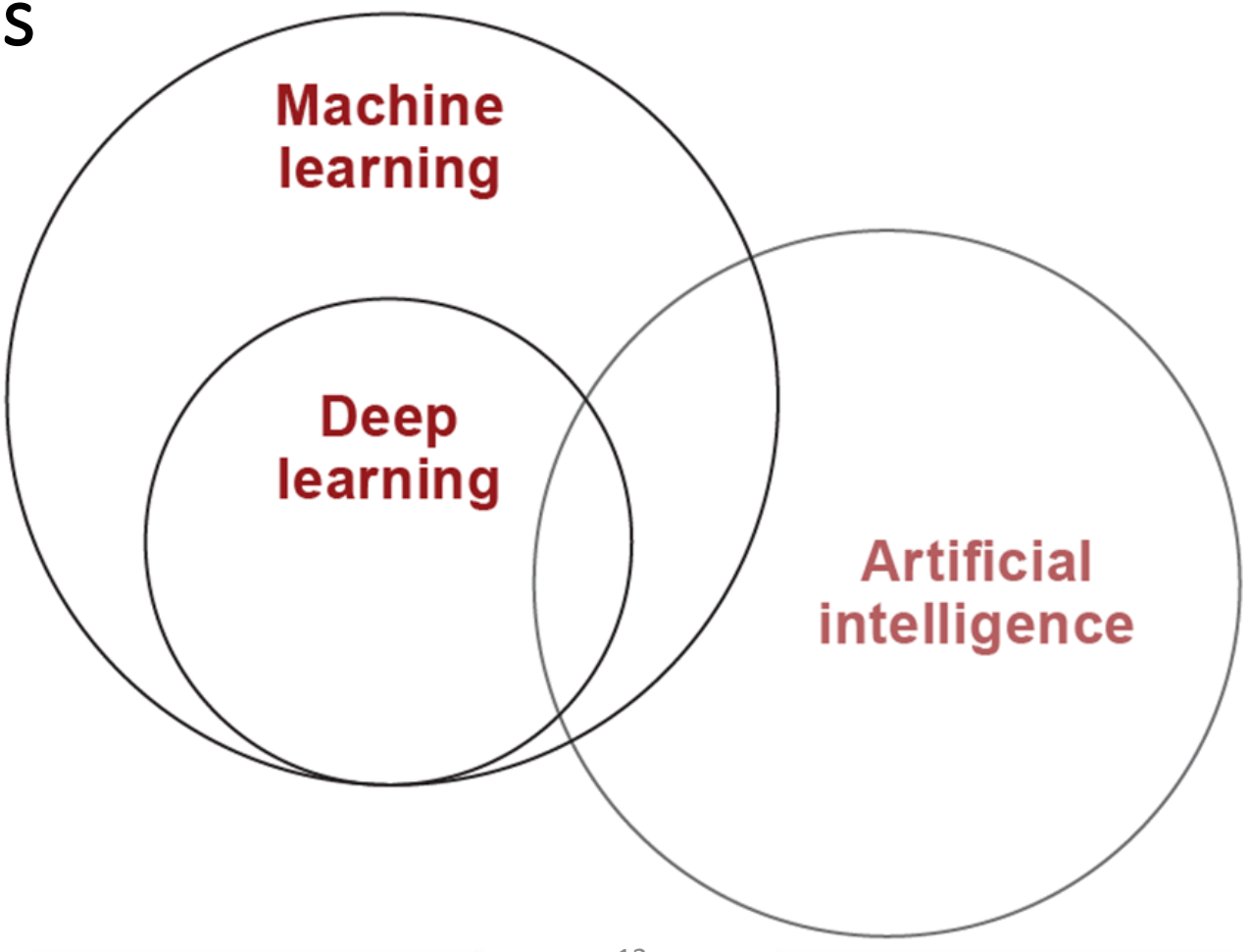
Our focus will be on:

Agents

Machine learning and specifically neural networks and deep learning.

More advanced search algorithms.

Focus



Robotics

Robotics is a field, and not an activity.

If I can work it into the syllabus I will, but as it is a wide concept, we need to be a little bit more specific as to what we want to do with it.

Robotics

Ecosystem?

Programming?

Electronics?

Mechanics?

Next steps

- Get a copy of the textbook and read through chapter 1 (Russel and Norvig)
- Ensure you have a practical environment (see textbook)